Utility Interconnection Equipment Certification

The information on this form is provided to indicate the compliance of the generation equipment listed below with the utility interconnection certification requirements defined in California PUC Electric Rule 21

Certifying Laboratory *The information on this form is provided by the following Nationally Recognized Test Laboratory*

Laboratory: Underwriters Laboratories Inc.

Contact Name: Timothy P. Zgonena Phone: (847) 664-3051

E-mail: Timothy.P.Zgonena@us.ul.com

Address: 333 Pfingsten Road

City: Northbrook State IL Zip 60062

Accredited by: OSHA Date: 11-15-02

Accredited to (test standards)[1]: UL 1741

Equipment Specification *The information on this form applies to the following equipment*

Equipment Manufacturer: Fuel Cell Energy.

Address: 3 Great Pasture Road

City, State, Zip: Danbury, CT 06813

Model Number(s): Fuel Cell Energy Inc. Model DFC300A-S, PCU using a UL Listed, SatCon Power Systems Canada, Ltd. Model AE-462-60-F-A inverter to perform the power generation and utility interconnection function for the PCU.

Software Version(s): SF-PC080-001

Effective[2]: October 30, 2002

Device Description[3]: Three Phase Utility Interactive Multi Mode Inverter, Model AE-462-60-F-A. Consists of inverter circuits housed in a metal enclosure. There are provisions for permanent connections to the input sources and output loads. The AC circuitry is wired for 480Vac, 3 phase 3 wire. Two separate AC outputs are provided, one being stand-alone and the other utility-interactive. They are intended to receive their DC input power from a separately supplied fuel-cell.

This report does not cover the DC source.

Test Results[4]

Mark the box next to each requirement that has been met and each test that has been performed and successfully passed. Provide an explanation of any exceptions or omissions on a separate sheet. List additional test documents used on a separate sheet

UL 1741: (Section number listed)

☑-39	☑-40.1	☑-41.2	☑-44	☑-45.2.2	☑-45.4	☑-45.5
☑-46.2	☑-46.2.3	☑-46.4	☑-47.3	☒-47.7	*Optional:*	☑-*46.3*

☑-IEEE/ANSI C62.45/C62.41 (location Category B3)

California Rule 21: ☒-J.3.e Non-export ☒-J.3.f In-Rush Current ☒-J.3.h Synchronization

Unit does not include a bypass switch, therefore, evaluation to UL 1741 47.7 is not required. The Utility Disconnect switch is not a part of this device.

Note: J.3.e, f, and h are not applicable to this device. Unit is not designated as a Non-Exporting unit, is a current source when grid connected, and does not require SCE power to start.

Device Rating:[5] 416 kW, 462 kVA

Maximum available fault current, A 700

In-rush current[6], A N/A

Trip settings (Magnitude/Timing)[7]:

		Setting 1 Phase A V L-L/s (max)	Setting 1 Phase B V L-L/s (max)	Setting 1 Phase C V L-L/s (max)	Setting 4	Setting 5	Factory Setting[8]
Fast Over Voltage	Setting	571/0.033	571/0.033	571/0.033	/	/	571 0.033
	Measured	571/0.0273	571/0.0235	571/0.0218	/	/	
Over Voltage	Setting	504/2	504/2	504/2	/	/	504 2
	Measured	503.8/1.218	503.8/0.902	503.8/1.040	/	/	
Under Voltage	Setting	451/2	451/2	451/2	/	/	451 2
	Measured	451.4/1.493	451.5/1.460	450.9/0.750	/	/	
Fast Under Voltage	Setting	366/0.1	366/0.1	366/0.1	/	/	366 0.1
	Measured	366/0.0264	366/0.0246	366/0.0194	/	/	
Frequency		Hz/s					
Over Frequency	Setting	60.5/0.1	-	-	/	/	60.5 0.1
	Measured	60.499/0.086	-	-	/	/	
Under Frequency	Setting	59.5/0.1	-	-	/	/	59.5 0.1
	Measured	59.449/0.093	-	-	/	/	

Trip Limits are set at the factory and are not field adjustable.

Nominal Power Factor (Range, if adjustable) 0.9 – 1 leading or lagging

Non Islanding: Yes X No ___ Maximum trip time: 1.8 s @100% and 70% output

Non Export: Yes ___ No X Method:

Other[9]: See attached Test Records provided with permission of SatCon

Notes:

1 Accreditation must apply to test standards listed herein.

2 Note here the date of certification, applicable serial number (range or first in series), or other information that indicates to which units the certification applies.

3 List appropriate functions, capabilities, applications, limitations, etc. Use additional sheets as necessary.

4 List all test documents (i.e. UL 1741, IEEE C62.45) and specific procedures (i.e. UL 1741 Sec 39.1 – 39.5, etc.) used to evaluate device's suitability for utility interconnection

5 kW, kVA, V, A, etc., as appropriate.

6 For devices that use grid power to motor to speed.

7 Enter trip magnitude, Voltage in volts or frequency in Hz, and trip timing, in cycles into each square (Magnitude/Timing). Devices with adjustable settings shall provide test results over the range of settings. For each test setting provide the setting values in the upper box and measured results in the lower box. List device ranges, if adjustable. Show data for one phase (greatest % difference between setting and measured magnitudes as well as the maximum trip time for that setting). Provide data for all phases (on additional sheets) if measured trip values for any two phases differ by more than 3% (for the same setting).

8 Note standard factory settings. Provide Voltage/Timing or Frequency/Timing.

9 Provide any additional information that may be useful in evaluating these results such as test configurations, device settings used to meet requirements, etc. Use additional sheets if necessary.